ABSTRACT

Context-aware computing systems and methods are described. In particular embodiments, location aware systems and methods are described. In the described embodiments, hierarchical tree structures are utilized to ascertain a device context or location. The tree structures can be stored on or accessible to mobile or stationary computing devices so that the devices can determine their own particular context or location. In one embodiment, one of the tree structures comprises a Master World tree structure that contains nodes that represent geographical divisions of the Earth. Another of the tree structures can comprise a so-called Secondary World that contains nodes that represent physical or logical entities that are organization or company specific views of the world. A computing device can automatically determine its context or location by ascertaining a node on one or more of the tree structures and then traversing the tree structure to ascertain the complete context. A unique device architecture is described that permits context aware computing. The device architecture comprises a context service module, a common interface, and one or more context providers. The context providers provide information, through the common interface, that pertains to the context of a device, and the context service module processes the information to device the device's context. An application program interface (API)/events layer is provided through which various applications can call the device to ascertain the device's location so that location dependent goods or services can be rendered. A privacy manager is also provided in some embodiments to enforce privacy thereby protecting the granularity of the location information that is provided to the applications. In addition, unique location

beacons are described that transmit information that can be used by the computing device to ascertain its location.